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EXAMINER	
LOVEL, KIMBERLY M	

ART UNIT	PAPER NUMBER
2167	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/754,010	DAY ET AL.	
	Examiner	Art Unit	
	KIMBERLY LOVEL	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,10-16 and 18-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-8, 10-16 and 18-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Amendment filed 19 June 2007.

2. Claims 1, 3-8, 10-16 and 18-21 are currently pending. In the Amendment filed 19 June 2007, none of the claims were amended. This action is made Non-Final.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 15 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

5. **Claim 15** is directed towards "A program storage product." According to page 8, line 21 – page 9, line 9 of Applicants' specification, the product includes non-statutory embodiments which improperly include network transmission lines (interpreted as wired and wireless transmission), wireless transmission media, signals propagating through space, radio waves, infrared signals, etc.

See, e.g., In re Nuitjen, Docket no. 2006-1371 (Fed. Cir. Sept. 20, 2007)(slip. op. at 18) "A transitory, propagating signal like Nuitjen's is not a process, machine, manufacture, or composition of matter.' ... Thus, such a signal cannot be patentable subject matter."

Therefore, since the program storage product fails to include the necessary

hardware, the claim can be interpreted as comprising entirely of software per se according to one of ordinary skill in the art.

According to MPEP 2106:

> The claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.
>
> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994)
>
> Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because "[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.").

6. To expedite a complete examination of the instant application, the claims rejected under 35 U.S.C. 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 3-8, 9-16 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article "Efficient Mid-Query Re-Optimization of Sub-Optimal Query Execution Plans" by Kabra et al (hereafter Kabra) in view of US PGPub 2005/0177557 to Ziauddin et al (hereafter Ziauddin).

Referring to claim 1, Kabra et al disclose a method for automatic handling of errors within a database engine (see abstract, lines 6-8 – the sub-optimality is considered to represent the *error*), including the further limitations of:

detecting an error while executing a query access plan, and wherein the query access plan is of the type generated by a query optimizer (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15 – the error is found during execution of the execution plan; the execution plan is considered to represent the *query access plan*);

in response to detecting the error (see page 109, column 2, line 34 – page 110, column 1, line 4 – after the error is determined the query plan is rebuilt since the remainder of the query plan is based on the estimate), automatically rebuilding the query access plan with query optimizer to generate a new query access plan (see page 110, column 1, lines 2-4 and lines 13-15 – upon the determination that the plan is sub-optimal, the query optimizer is re-invoked to generate a new execution plan); and

executing the new query access plan to generate at least a portion of a result set for storage or display (see page 110, column 1, line 15 – the fresh new execution plan for the query is executed). However, Kabra fails to explicitly disclose the further limitation wherein the error is an execution error of a type that halts execution of the query access plan. Ziauddin discloses execution of a query plan (see abstract), including the further limitations of detecting an error while executing the plan, wherein the error is an execution error of a type that halts execution of the query access plan and in response to detecting the error, automatically rebuilding the query access plan to generate a new query access plan (see [0017]).

It would have been obvious to one of ordinary skill in the art to use Ziauddin's steps for automatically rebuilding a plan after an error has been detected that causes execution to fail with method for query re-optimization as disclosed by Kabra which detects errors due to optimization. One would have been motivated to do so in order to improve the performance of applications through the generation of optimal plans (Ziauddin: see [0003]).

Referring to claim 3, the combination of Kabra and Ziauddin (hereafter Kabra/Ziauddin) discloses the method of claim 1, wherein the error is a function check [error in the join] (Kabra: see page 109, column 2, lines 29-33).

Referring to claim 4, Kabra/Ziauddin discloses the method of claim 1 further comprising the steps of:

receiving another error while executing a function within the new query access plan; identifying a first implementation method of the function within the new query

access plan; and rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (Ziauddin: see [0029]).

Referring to claim 5, Kabra/Ziauddin discloses the method according to claim 1, further comprising the step of: logging information about the error, and the new query access plan (Kabra: see page 9, column 1, lines 16-27).

Referring to claim 6, Kabra/Ziauddin discloses the method according to claim 1, further comprising the step of: reporting the error (Kabra: see page 109, column 1, lines 16-27).

Referring to claim 7, Kabra et al disclose a method for automatic handling of errors within a database engine (see abstract, lines 6-8 – the sub-optimality is considered to represent the *error*), including the further limitations of:

receiving an error while executing a function within a query access plan and wherein the query access plan is of the type generated by a query optimizer (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15 – the error is found during execution of the execution plan; the execution plan is considered to represent the *query access plan*);

rebuilding the query access plan with the query optimizer (see page 110, column 1, lines 2-4 and lines 13-15 – upon the determination that the plan is sub-optimal, the query optimizer is re-invoked to generate a new execution plan); and

executing the new query access plan to generate at least a portion of a result set for storage or display (see page 110, column 1, line 15 – the fresh new execution plan

for the query is executed). However, Kabra fails to explicitly disclose the further limitation wherein the error is an execution error of a type that halts execution of the query access plan; and identifying a first implementation method of the function within the new query access plan; and rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan. Ziauddin discloses execution of a query plan (see abstract), including the further limitations of detecting an error while executing the plan, wherein the error is an execution error of a type that halts [abort] execution of the query access plan (see [0015] and [0017]); identifying a first implementation method of the function within the new query access plan (see [0029]); and rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (see [0017]).

It would have been obvious to one of ordinary skill in the art to use Ziauddin's steps for rebuilding a plan after an error has been detected that causes execution to fail with method for query re-optimization as disclosed by Kabra, which detects errors due to optimization. One would have been motivated to do so in order to improve the performance of applications through the generation of optimal plans (Ziauddin: see [0003]).

Referring to claim 8, Kabra/Ziauddin discloses the method of claim 7, wherein the function is one of a join function [error in the join], an indexing function, a grouping function, and an ordering function (Kabra: see page 109, column 2, lines 29-33).

Referring to claim 10, Kabra/Ziauddin discloses the method of claim 7, further comprising the steps of:

receiving another error while executing the function within the new query access plan; and rebuilding the new query access plan by replacing the second implementation method with a third implementation method of the function (Ziauddin: see [0029]).

Referring to claim 11, Kabra/Ziauddin discloses the method according to claim 10 further comprising the step of: logging information about the error, the another error, and the new query access plan (Kabra: see page 109, column 1, lines 16-27).

Referring to claim 12, Kabra et al disclose a method for automatic handling of errors within a database engine (see abstract, lines 6-8 – the sub-optimality is considered to represent the *error*), including the further limitations of:

executing a query access plan comprising a plurality of functions, each function including a first implementation method, and the query access plan of the type generated by a query optimizer (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15);

detecting a first error when executing a first function (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15 – the error is found during execution of the execution plan; the execution plan is considered to represent the *query access plan*);

rebuilding the query access plan to generate a new query access plan with the query optimizer (see page 110, column 1, lines 2-4 and lines 13-15 – upon the determination that the plan is sub-optimal, the query optimizer is re-invoked to generate a new execution plan); and

executing the new query access plan to generate at least a portion of a result set for storage or display (see page 110, column 1, line 15 – the fresh new execution plan for the query is executed). However, Kabra fails to explicitly disclose the further limitations wherein the error is an execution error of a type that halts execution of the query access plan; receiving a second error while executing the first function within the new query access plan; rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function. Ziauddin discloses execution of a query plan (see abstract), including the further limitations of detecting an error while executing the plan, wherein the error is an execution error of a type that halts execution of the query access plan (see [0015] and [0017]); receiving a second error while executing the first function within the new query access plan (see [0029]); rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function (see [0017]).

It would have been obvious to one of ordinary skill in the art to use Ziauddin's steps for rebuilding a plan after an error has been detected that causes execution to fail with method for query re-optimization as disclosed by Kabra which detects errors due to optimization. One would have been motivated to do so in order to improve the performance of applications through the generation of optimal plans (Ziauddin: see [0003]).

Referring to claim 13, the program product is rejected on the same grounds as the method of claim 1.

Referring to claim 14, Kabra/Ziauddin discloses the program product of claim 13, wherein the program code is further configured to:

receive an error while executing a function within the new query access plan; identify a first implementation method of the function within the new query access plan); and rebuild [re-optimize] the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (Ziauddin: [0029]).

Referring to claim 15, the program product is rejected on the same grounds as the method of claim 7.

Referring to claim 16, the apparatus is rejected on the same grounds as the method of claim 1.

Referring to claim 18, Kabra/Ziauddin discloses apparatus of claim 16, wherein the error is a function check [error in the join] (Kabra: see page 109, column 2, lines 29-33).

Referring to claim 19, Kabra/Ziauddin discloses the apparatus of claim 16, wherein the program code is further configured to:

detect another error while executing a function within the new query access plan; identify a first implementation method of the function within the new query access plan; and rebuild [re-optimize] the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (Ziauddin: see [0029]).

Referring to claim 20, Kabra/Ziauddin discloses apparatus according to claim 16, wherein the program code is further configured to: log information about the error, and the new query access plan (Kabra: see page 109, column 1, lines 16-27).

Referring to claim 21, Kabra/Ziauddin discloses the apparatus according to claim 16, wherein the program code is further configured to: report the error (Kabra: see page 109, column 1, lines 16-27).

Response to Arguments

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Patent No 7,146,352 titled "Query Optimizer System and Method" to Brundage et al

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY LOVEL whose telephone number is (571)272-2750. The examiner can normally be reached on 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kimberly Lovel
Examiner
Art Unit 2167

16 March 2008
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/John R. Cottingham/

Supervisory Patent Examiner, Art Unit 2167